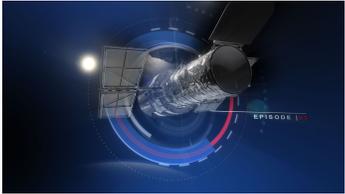




ESO, Karl-Schwarzschild-Str.2
D-85748 Garching bei München,
Germany
Telephone: +49 (0)89 3200 6855
Telefax: +49 (0)89 3200 6480
hubble@eso.org

www.spacetelescope.org

Keywords: Distances, Cepheids, Henrietta Leavitt

Hubblecast Episode 116: Henrietta Leavitt — the woman who measured the Universe	Visual notes
<p>00:00 [Narrator] 1. The NASA/ESA Hubble Space Telescope is named after the famous astronomer Edwin Hubble. He discovered that there are galaxies outside of our own and that the Universe is expanding. However, these remarkable discoveries wouldn't have been possible without one exceptional astronomer before him — Henrietta Swan Leavitt.</p>	 
<p>00:30 2. Henrietta Leavitt — the woman who measured the Universe</p>	

00:40

[Narrator]

3. Henrietta Leavitt was born in Lancaster, Massachusetts in 1868. She studied at Oberlin College, Ohio, and then Harvard University's Society for the Collegiate Instruction of Women. It wasn't until her final year at university that she began to study astronomy — but this sparked a keen interest that she would pursue for the rest of her life.



01:10

4. She began to work at Harvard Observatory as a “computer” — one of several skilled women hired to process astronomical data. She helped with cataloguing the brightness of every measurable star and was quickly promoted to be head of the photographic stellar photometry department.



01:34

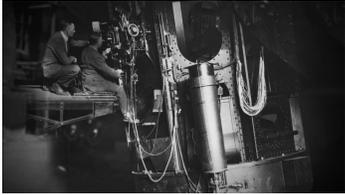
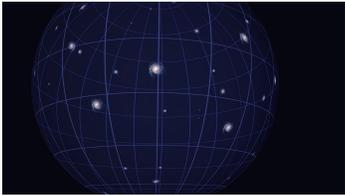
5. Supplied with photographic plates of the stars in the southern sky, Leavitt was tasked with classifying variable stars — ones that fluctuate in brightness.



01:47

6. While studying these changing stars she noticed a pattern: the brighter the star, the longer the period of the fluctuations. The easily measured length of the star's fluctuations directly leads to its brightness — and to its distance. The observation of these Cepheid variables turned out to be the key to a fundamental change in our understanding of the Universe.



	
<p>02:16</p> <p>8. Edwin Hubble used this “measuring tape” to determine the distance to what was then known as the Andromeda nebula. The result showed that Andromeda was actually not part of the Milky Way but a galaxy on its own, millions of light-years away. Edwin Hubble discovered that our Universe contains many more galaxies than just the Milky Way.</p>	 
<p>02:46</p> <p>10. Hubble measured the distances to more and more galaxies using Leavitt’s Law. These measurements led him to another astounding deduction: the entire Universe is expanding.</p> <p>He gathered the first observational evidence for the big bang.</p>	 
<p>03:10</p> <p>11. Henrietta Swan Leavitt never knew the impact of her discovery. She died three years before Hubble announced his revelation about the Andromeda Galaxy. However, even today Leavitt’s discovery remains a vital foundation of modern cosmology and it is still used to determine the distances to galaxies.</p>	

Ends 03:38